REMARKS

I. Introduction

In response to the Office Action dated January 2, 2004, claims 29, 31, 33, 35, 37, 44 and 45 have been amended, and new claims 46-83 have been added. Claims 24-83 are in the application. Re-examination and re-consideration of the application, as amended, is requested.

II. Claim Amendments

Applicants' attorney has made amendments to the claims as indicated above.

The amendments to claims 29, 31, 33, 35 and 37 were made solely for the purpose of clarifying the language of the claims, and were not required for patentability or to distinguish the claims over the prior art.

The amendments to claims 44 and 45 were made solely for the purpose of synchronizing the language of these claims with independent claim 1, and were not required for patentability or to distinguish the claims over the prior art.

III. Non-Art Rejections

In paragraphs (8)-(9) of the Office Action, claims 29, 31, 33, 35 and 37 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite.

Applicants' attorney traverses the rejections, but has amended the claims using alternative language as set forth in M.P.E.P.§2173.05(h).

IV. Prior Art Rejections

A. The Office Action Rejections

In paragraphs (10)-(11) of the Office Action, claims 24-34, 36-40, and 42-43 were rejected under 35 U.S.C. §102(e) as being anticipated by Iyer et al., U.S. Patent No. 5,899,992 (Iyer). In paragraphs (13)-(14) of the Office Action, claim 35 was rejected under 35 U.S.C. §103(a) as being unpatentable over Iyer in view of SAS Institute Inc., SAS OnlineDoc®, Version 8, Cary, NC: SAS Institute Inc., (SAS). In paragraphs (15)-(16) of the Office Action, claim 41 was rejected under 35 U.S.C. §103(a) as being unpatentable over Iyer in view of Shafer et al., SPRINT: A Scalable Parallel Classifier for Data Mining, Proceeding of the 22nd VLDB Conference Mumbai, 1996 (Shafer). In paragraphs (17)-(18) of the Office Action, claims 44 and 45 were rejected under 35 U.S.C. §103(a) as being unpatentable over Iyer in view of Bridges, U.S. Patent No. 5,548,770 (Bridges).

Applicants' attorney respectfully traverses these rejections.

B. Applicants' Independent Claims

Applicants' independent claims 24, 44 and 45 are generally directed to computer-implemented system for performing data mining applications. Claim 1 is representative and comprises the elements of:

(a) a computer having one or more data storage devices connected thereto, wherein a relational database is stored on one or more of the data storage devices;

(b) a relational database management system, executed by the computer, for accessing the relational database stored on the data storage devices; and

(c) an analytic application programming interface (API) that generates a set of scalable data mining functions including queries for execution by the relational database management system, executed by the computer, for performing data mining operations directly within the database management system.

C. The Iyer Reference

Iyer describes a method, apparatus, and article of manufacture for a computer implemented scaleable set-oriented classifier. The scalable set-oriented classifier stores set-oriented data as a table in a relational database. The table is comprised of rows having attributes. The scalable set-oriented classifier classifies the rows by building a classification tree. The scalable set-oriented classifier determines a gini index value for each split value of each attribute for each node that can be partitioned in the classification tree. The scalable set-oriented classifier selects an attribute and a split value for each node that can be partitioned based on the determined gini index value corresponding to the split value. Then, the scalable set-oriented classifier grows the classification tree by another level based on the selected attribute and split value for each node. The scalable set-oriented classifier repeats this process until each row of the table has been classified in the classification tree.

D. The SAS Reference

SAS describes a correlation matrix. The correlation matrix table contains Pearson product-moment correlations of Y variables. Correlation measures the strength of the linear relationship between two variables.

E. The Shafer Reference

Shafer describes a scalable parallel classifier for data mining. A decision-tree-based classification algorithm, called SPRINT, removes all memory restrictions and is fast and scalable.

F. The Bridges Reference

Bridges describes an indexing system and method for improving retrieval of data based on a query from a user from a database management system including a main computer and a memory coupled to the main computer for storing the data. The indexing system includes a parallel computer coupled to the main computer and a parallel disk array coupled to the parallel computer. The invention includes the steps of storing record based data in the memory of the database management system, storing a value based index of selected attributes related to the record based data on the parallel disk array, and determining whether the parallel computer can be used to execute a query to obtain at least a partial result to the query. If so, the query is sent to the parallel computer and the query is executed on the parallel computer to obtain at least a partial result. If a final result cannot be determined on the parallel computer, the partial result from the parallel computer is sent to the database management system and a final result is determined on the database management system using the partial result received from the parallel computer.

G. Applicants' Claimed Invention Is Patentable Over The Reference

Applicants' attorney respectfully submits that Applicants' claimed invention is patentable over the cited references, because the references do not teach or suggest the specific combination of elements recited in Applicants' claims. Specifically, the references do not teach or suggest "an analytic application programming interface (API) that generates a set of scalable data mining functions including queries for execution by the relational database management system, executed by the computer, for performing data mining operations directly within the database management system."

However, the Office Action asserts that Iyer teaches these limitations of Applicants' claims at col. 3, line 50 through col. 4, line 26 (actually col. 4, line 35), which is set forth below:

The scalable set-oriented classifier 114 of the present invention resorts to proven scalable database technology to provide a generic solution to the classification problem of scalability. The present invention provides a scalable model for classifying rows of a table within a classification tree. The scalable set-oriented classifier 114 is called the Scalable Supervised Learning Irregardless of Memory (SLIM) Classifier 114. Not only is the SLIM classifier 114 scalable in regions where recently published classifiers are not, but by virtue of building on well known set-oriented database management system (DBMS) primitives, the SLIM classifier 114 instantly exploits several decades of database research and development. The present invention rephrases classification, a data mining method, into analysis of data in a star schema, formalizing further the interrelationship between data mining and data warehousing.

A description of a prototype built using IBM's DB2 product as the RDBMS 108, and experimental results for the prototype are discussed below. Generally, the experimental results indicate that the DB2-based SLIM classifier 114 has desirable properties associating it with linear scalability.

The SLIM classifier 114 is built based on a set-oriented access to data paradigm. The SLIM classifier 114 uses Structured Query Language (SQL), offered by most commercial RDBMS 108 vendors, as the basis for the method. The SLIM classifier 114 is based on well known database methodologies and lets the RDBMS 108 automatically handle scalability. As a result, the SLIM classifier 114 will scale as long as the database scales.

The SLIM classifier 114 leverages the Structured Query Language (SQL) Application Programming Interface (API) of the RDBMS 108, which exploits the benefits of many years research and development pertaining to:

(1) scalability
(2) memory hierarchy
(3) parallelism ([18])
(4) optimization of the executions([16])
(5) platform independence
(6) client server API ([17]).

See S. Sarawagi, Query Processing in Tertiary Memory Databases, VLDB 1995, [hereinafter Sarawag]; S. Sarawagi and M. Stonebraker, Benefits of Reordering Execution in Tertiary Memory Databases, VLDB 1996, [hereinafter Stonebraker]; G. Bhargava, P. Goel, and B. Iyer, Hypergraph Based Reordering of Outer Join Queries with Complex Predicates, SIGMOD 1995, [hereinafter Bhargava]; T. Nguyen and V. Srinivasan, Accessing Relational Databases from the World Wide Web, SIGMOD 1996, [hereinafter Goel]; C. K. Baru et. al., DB2 Parallel Edition, IBM Systems Journal, Vol. 34, No 2, 1995, [hereinafter Baru]; each of which is which is incorporated by reference herein.

Applicants' attorney disagrees with this analysis. The above portions of Iyer do not provide a proper basis for rejecting claims 24-45, because nowhere is the prior art reference properly applied to the limitations of claims 24-45. Instead, the Office Action relies on general conclusory statements to reject Applicants' claims, without addressing the specific limitations of those claims or the specific teachings of the references.

Consider, for example, that the above portion of Iyer does not teach or suggest "an analytic application programming interface (API) that generates a set of scalable data mining functions including queries for execution by the relational database management system, executed by the computer, for performing data mining operations directly within the database management system." Instead, the only API discussed in the above portions of Iyer is the API of the relational database management system (RDBMS), not the scalable set-oriented classifier that is alleged to be analogous to Applicants' claimed analytic API. Moreover, this API of the RDBMS in Iyer only invokes functions of the RDBMS, but says nothing about generating a set of scalable data mining functions as recited in Applicants' claims.

Further, SAS, Shafer and Bridges fail to overcome the deficiencies of Iyer. Recall that SAS was cited only for Pearson-Product moment correlation and co-variance matrices, Shafer was cited only for performing a split and Bridges was cited only for a parallel computer system.

Moreover, Applicants' claimed invention provides operational advantages over the system disclosed in the various references. Moreover, Applicants' claimed invention solves problems not recognized by the cited references.

Thus, Applicants' attorney submits that independent claims 24, 44, and 45 are allowable over Iyer, SAS, Shafer, and Bridges. Further, dependent claims 25-43 and 46-83 are submitted to be allowable over Iyer, SAS, Shafer, and Bridges in the same manner, because they are dependent on independent claims 24, 44, and 45, respectively, and thus contain all the limitations of the independent claims. In addition, dependent claims 25-43 and 46-83 recite additional novel elements not shown by Iyer, SAS, Shafer, and Bridges.

V. Conclusion

In view of the above, it is submitted that this application is now in good order for allowance and such allowance is respectfully solicited.

Should the Examiner believe minor matters still remain that can be resolved in a telephone interview, the Examiner is urged to call Applicants' undersigned attorney.

Respectfully submitted,

GATES & COOPER LLP
Attorneys for Applicants

Howard Hughes Center
6701 Center Drive West, Suite 1050
Los Angeles, California 90045
(310) 641-8797

Date: April 1, 2004

By: _____
Name: George H. Gates
Reg. No.: 33,500

GHG/